ALDRIN and DIELDRIN
CAS # 309-00-2 and 60-57-1

Agency for Toxic Substances and Disease Registry ToxFAQs **April 1993**

This fact sheet answers the most frequently asked health questions (FAQs) about aldrin and dieldrin. For more information, call the ATSDR Information Center at 1-888-422-8737. This fact sheet is one in a series of summaries about hazardous substances and their health effects. It's important you understand this information because this substance may harm you. The effects of exposure to any hazardous substance depend on the dose, the duration, how you are exposed, personal traits and habits, and whether other chemicals are present.

SUMMARY: Exposure to aldrin and dieldrin happens mostly from eating contaminated foods, such as root crops, fish, or seafood. Aldrin and dieldrin build up in the body after years of exposure and can damage the nervous system. Aldrin has been found in at least 36 of 1,300 National Priorities List sites identified by the Environmental Protection Agency (EPA). Dieldrin has been found in at least 162 of the 1,300 sites.

What are aldrin and dieldrin?

(Pronounced ôl′ drĭn and dī-ĕl′ drĭn)

Aldrin and dieldrin are insecticides with similar structures. They are discussed together in this fact sheet because aldrin quickly breaks down to dieldrin in the body and in the environment. Pure aldrin and dieldrin are white powders with a mild chemical odor. The less pure commercial powders have a tan color. Aldrin and dieldrin do not occur naturally in the environment.

From 1950 to 1970, aldrin and dieldrin were popular pesticides for crops like corn and cotton. Because of concerns about damage to the environment and the potential harm to human health, EPA banned all uses of aldrin and dieldrin in 1974 except to control termites. In 1987, EPA banned all uses.

What happens to aldrin and dieldrin when they enter the environment?

- Sunlight and bacteria change aldrin to dieldrin so we mostly find dieldrin in the environment.
- They bind tightly to soil and slowly evaporate to the air.
- Dieldrin breaks down very slowly.
- Plants take in and store aldrin and dieldrin from the soil.
- Aldrin rapidly changes to dieldrin in plants and animals.
- Dieldrin is stored in the fat and leaves the body very slowly.

How might I be exposed to aldrin or dieldrin?

- Dieldrin is everywhere in the environment, but at very low levels.
- Since its use was banned, most foods contain very little, if any, dieldrin.
- Foods such as fish, seafood, dairy products, fatty meats, and root crops grown in contaminated water or soil may have higher levels of dieldrin.
- Air, surface water, or soil near waste sites may also contain higher levels.

How can aldrin and dieldrin affect my health?

Aldrin and dieldrin mainly affect the central nervous system. Accidental or intentional ingestion of high levels of aldrin and dieldrin result in convulsions and death. These levels are many thousands of times higher than the average exposure.

Ingesting moderate levels of aldrin or dieldrin over a longer period may also cause convulsions. This occurs because aldrin and dieldrin build up in our bodies.

We don't know the effects of exposure to low levels of aldrin or dieldrin over a long time. Some workers who made or applied the insecticides had nervous system effects with excitation leading to convulsions. Lesser effects in some workers included:

- headaches
- dizziness
- vomiting
- irritability
- uncontrolled muscle movements

Workers removed from the source of exposure rapidly recovered from most of these effects.

Studies in animals indicate that aldrin or dieldrin may reduce the body's ability to resist infection.

How likely are aldrin and dieldrin to cause cancer?

The International Agency for Research on Cancer (IARC) has determined that aldrin and dieldrin are not classifiable as to their carcinogenicity to humans. There is no direct evidence that aldrin or dieldrin causes cancer in humans. Studies on workers generally show no increase in cancer or deaths due to cancer. Mice given high amounts of dieldrin, however, did develop liver cancers.

Is there a medical test to show whether I've been exposed to aldrin or dieldrin?

Tests are available that measure the amount of dieldrin in blood, fat, breast milk, and body tissues. The blood test is most often used. The amount of dieldrin in the body indicates how much dieldrin you were exposed to, but not when, since dieldrin stays in the body for a long time. The blood test is simple, but are not routinely performed at your doctor's office.

Some studies in people predict that levels above 0.20 milligrams of dieldrin in a liter of blood (0.20 mg/L) may result in harmful effects such as convulsions or uncontrollable muscle movements.

Has the federal government made recommendations to protect human health?

The Environmental Protection Agency (EPA) defines aldrin and dieldrin as hazardous solid waste. In 1974, EPA banned all uses of aldrin or dieldrin except as a termite killer. By 1987, EPA banned all uses. EPA concludes that the maximum amount of aldrin and dieldrin that can be present in our water and seafood should not exceed 74 picograms per liter (pg/L) of aldrin or 71 pg/L of dieldrin.

The Food and Drug Administration (FDA) regulates the residues of aldrin and dieldrin in raw foods. The allowable range for residues is from 0 to 0.1 parts of dieldrin to one million parts of food (0-0.1 ppm) depending on the type of food product. This limits the intake of aldrin and dieldrin in food to safe levels.

Glossary

Carcinogenicity: Ability to cause cancer.

Ingestion: Taking food or drink into your body.

ppm: Parts per million.

Picogram (pg): One trillionth of a gram.

Milligram (mg): One thousandth of a gram.

References

Agency for Toxic Substances and Disease Registry (ATSDR). 1993. Toxicological profile for aldrin/dieldrin. Atlanta: U.S. Department of Health and Human Services, Public Health Service.

Where can I get more information? For more information, contact the Agency for Toxic Substances and Disease Registry, Division of Toxicology, 1600 Clifton Road NE, Mailstop E-29, Atlanta, GA 30333. Phone:1-888-422-8737, FAX: 404-639-6359. ToxFAQs Internet address via WWW is http://www.atsdr.cdc.gov/toxfaq.html ATSDR can tell you where to find occupational and environmental health clinics. Their specialists can recognize, evaluate, and treat illnesses resulting from exposure to hazardous substances. You can also contact your community or state health or environmental quality department if you have any more questions or concerns.